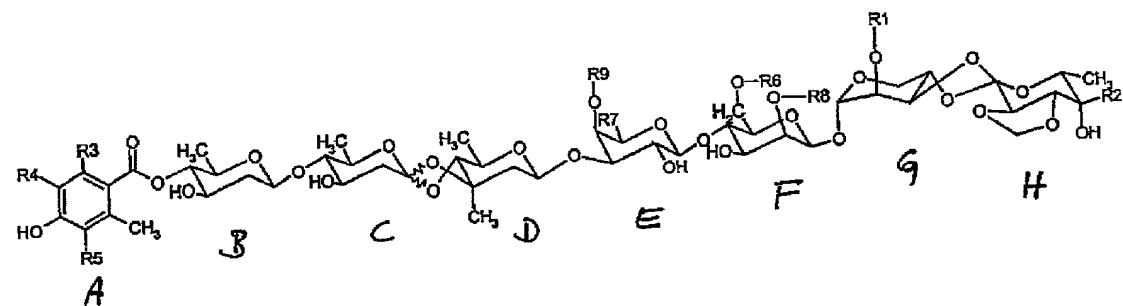


Claims

We claim:

1. Avilamycin derivative according to the general Formula I, also in the form of its diastereomers or enantiomers, its racemic mixtures or other mixtures or pure diastereomers and/or enantiomers,



where independently of one another, with the following exception,

R1 is selected from H, COCH₃, COC₄H₉, COCH(CH₃)₂ or COCH₂CH₃,

R2 is selected from H, CHO, COCH₃ or CH(OH)CH₃,

R3 corresponds to OCH_3 ,

R4 corresponds to Cl,

R5 corresponds to Cl,

R6 corresponds to CH_3 ,

R7 corresponds to H, CH₃ or CH₂OH,

R8 corresponds to CH_3 , and

R9 corresponds to CH_3 ,

where the following applies with reference to at least one of the residues R3-R6, R8 or R9 in Formula I, in deviation from the above definition:

R3 is to be replaced by OH,

R4 is to be replaced by H,

R5 is to be replaced by H,

R6 is to be replaced by H,

R8 is to be replaced by H, and/or

R9 is to be replaced by H,

with the proviso that R1-R9 cannot simultaneously take on the meanings in accordance with the combination, in each instance, in one of the compounds 1-4:

No.	R1	R2	R3	R4	R5	R6	R7	R8	R9
1	COCH(CH ₃) ₂	COCH ₃	OH	H	Cl	CH ₃	CH ₃	CH ₃	CH ₃
2	COCH(CH ₃) ₂	COCH ₃	OCH ₃	Cl	H	CH ₃	CH ₃	CH ₃	CH ₃
3	COCH(CH ₃) ₂	COCH ₃	OCH ₃	Cl	Cl	H	CH ₃	CH ₃	CH ₃
4	COCH(CH ₃) ₂	COCH ₃	OCH ₃	Cl	Cl	CH ₃	CH ₃	H	CH ₃

2. Avilamycin derivative according to Claim 1, characterized in that at least R3 is to be replaced by OH, with the proviso that R1-R9 cannot simultaneously take on the meanings in accordance with the combination in the compound 1:

No.	R1	R2	R3	R4	R5	R6	R7	R8	R9
1	COCH(CH ₃) ₂	COCH ₃	OH	H	Cl	CH ₃	CH ₃	CH ₃	CH ₃

3. Avilamycin derivative according to one of Claims 1 or 2, characterized in that at least R4 and R5 in Formula I are to be replaced by H.

4. Avilamycin derivative according to one of Claims 1 to 3, characterized in that at least R6, R8 and/or R9 is/are to be replaced by H, with the proviso that R1-R9 cannot simultaneously take on the meanings in accordance with the combination in the compound 3 or cannot simultaneously take on the meanings in accordance with the combination in the compound 4:

No.	R1	R2	R3	R4	R5	R6	R7	R8	R9
3	COCH(CH ₃) ₂	COCH ₃	OCH ₃	Cl	Cl	H	CH ₃	CH ₃	CH ₃
4	COCH(CH ₃) ₂	COCH ₃	OCH ₃	Cl	Cl	CH ₃	CH ₃	H	CH ₃

5. Avilamycin derivative according to one of Claims 1 to 4, characterized in that at least R3 is to be replaced by OH, for one thing, and at least R4 and R5 are to be replaced by H, for another thing, or at least R6, R8 and/or R9 is/are to be replaced by H.

6. Avilamycin derivative according to the general Formula I, also in the form of its diastereomers or enantiomers, its racemic mixtures or other mixtures or pure diastereomers and/or enantiomers, that is selected from among compounds in which R1-R9 are combined as follows:

No.	R1	R2	R3	R4	R5	R6	R7	R8	R9
5	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
6	COCH ₂ CH ₃	H	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
7	COCH ₃	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
8	COCH(CH ₃) ₂	CH(OH)CH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
9	H	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
10	COCH ₃	CH(OH)CH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
11	H	CH(OH)CH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
12	COC ₄ H ₉	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
13	COCH(CH ₃) ₂	COCH ₃	OH	Cl	H	CH ₃	CH ₃	CH ₃	CH ₃
14	COCH ₂ CH ₃	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
15	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	H	CH ₃	CH ₃	CH ₃
16	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	CH ₃	CH ₂ OH	CH ₃	CH ₃
17	COCH(CH ₃) ₂	CHO	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
18	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	CH ₃	H	CH ₃	CH ₃
19	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	H	CH ₃
20	COCH(CH ₃) ₂	COCH ₃	OH	H	H	CH ₃	CH ₃	CH ₃	CH ₃
21	COCH ₂ CH ₃	H	OH	H	H	CH ₃	CH ₃	CH ₃	CH ₃
22	COCH ₃	COCH ₃	OH	H	H	CH ₃	CH ₃	CH ₃	CH ₃
23	COCH(CH ₃) ₂	CH(OH)CH ₃	OH	H	H	CH ₃	CH ₃	CH ₃	CH ₃
24	H	COCH ₃	OH	H	H	CH ₃	CH ₃	CH ₃	CH ₃
25	COCH ₃	CH(OH)CH ₃	OH	H	H	CH ₃	CH ₃	CH ₃	CH ₃
26	H	CH(OH)CH ₃	OH	H	H	CH ₃	CH ₃	CH ₃	CH ₃
27	COCH(CH ₃) ₂	COCH ₃	OH	H	H	CH ₃	CH ₃	CH ₃	CH ₃
28	COC ₄ H ₉	COCH ₃	OH	H	H	CH ₃	CH ₃	CH ₃	CH ₃
29	COCH(CH ₃) ₂	COCH ₃	OH	H	H	CH ₃	CH ₃	CH ₃	CH ₃
30	COCH ₂ CH ₃	COCH ₃	OH	H	H	CH ₃	CH ₃	CH ₃	CH ₃
31	COCH(CH ₃) ₂	COCH ₃	OH	H	H	H	CH ₃	CH ₃	CH ₃
32	COCH(CH ₃) ₂	COCH ₃	OH	H	H	CH ₃	CH ₂ OH	CH ₃	CH ₃
33	COCH(CH ₃) ₂	CHO	OH	H	H	CH ₃	CH ₃	CH ₃	CH ₃
34	COCH(CH ₃) ₂	COCH ₃	OH	H	H	CH ₃	H	CH ₃	CH ₃
35	COCH(CH ₃) ₂	COCH ₃	OH	H	H	CH ₃	CH ₃	H	CH ₃

No.	R1	R2	R3	R4	R5	R6	R7	R8	R9
36	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	H	CH ₃	CH ₃	CH ₃
37	COCH ₂ CH ₃	H	OH	Cl	Cl	H	CH ₃	CH ₃	CH ₃
38	COCH ₃	COCH ₃	OH	Cl	Cl	H	CH ₃	CH ₃	CH ₃
39	COCH(CH ₃) ₂	CH(OH)CH ₃	OH	Cl	Cl	H	CH ₃	CH ₃	CH ₃
40	H	COCH ₃	OH	Cl	Cl	H	CH ₃	CH ₃	CH ₃
41	COCH ₃	CH(OH)CH ₃	OH	Cl	Cl	H	CH ₃	CH ₃	CH ₃
42	H	CH(OH)CH ₃	OH	Cl	Cl	H	CH ₃	CH ₃	CH ₃
43	COCH(CH ₃) ₂	COCH ₃	OH	H	Cl	H	CH ₃	CH ₃	CH ₃
44	COC ₄ H ₉	COCH ₃	OH	Cl	Cl	H	CH ₃	CH ₃	CH ₃
45	COCH(CH ₃) ₂	COCH ₃	OH	Cl	H	H	CH ₃	CH ₃	CH ₃
46	COCH ₂ CH ₃	COCH ₃	OH	Cl	Cl	H	CH ₃	CH ₃	CH ₃
47	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	H	CH ₃	CH ₃	CH ₃
48	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	H	CH ₂ OH	CH ₃	CH ₃
49	COCH(CH ₃) ₂	CHO	OH	Cl	Cl	H	CH ₃	CH ₃	CH ₃
50	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	H	H	CH ₃	CH ₃
51	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	H	CH ₃	H	CH ₃
52	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	H	CH ₃
53	COCH ₂ CH ₃	H	OH	Cl	Cl	CH ₃	CH ₃	H	CH ₃
54	COCH ₃	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	H	CH ₃
55	COCH(CH ₃) ₂	CH(OH)CH ₃	OH	Cl	Cl	CH ₃	CH ₃	H	CH ₃
56	H	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	H	CH ₃
57	COCH ₃	CH(OH)CH ₃	OH	Cl	Cl	CH ₃	CH ₃	H	CH ₃
58	H	CH(OH)CH ₃	OH	Cl	Cl	CH ₃	CH ₃	H	CH ₃
59	COCH(CH ₃) ₂	COCH ₃	OH	H	Cl	CH ₃	CH ₃	H	CH ₃
60	COC ₄ H ₉	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	H	CH ₃
61	COCH(CH ₃) ₂	COCH ₃	OH	Cl	H	CH ₃	CH ₃	H	CH ₃
62	COCH ₂ CH ₃	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	H	CH ₃
63	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	H	CH ₃	H	CH ₃
64	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	CH ₃	CH ₂ OH	H	CH ₃
65	COCH(CH ₃) ₂	CHO	OH	Cl	Cl	CH ₃	CH ₃	H	CH ₃
66	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	CH ₃	H	H	CH ₃
67	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	H	CH ₃
68	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	H
69	COCH ₂ CH ₃	H	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	H
70	COCH ₃	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	H
71	COCH(CH ₃) ₂	CH(OH)CH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	H
72	H	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	H
73	COCH ₃	CH(OH)CH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	H
74	H	CH(OH)CH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	H
75	COCH(CH ₃) ₂	COCH ₃	OH	H	Cl	CH ₃	CH ₃	CH ₃	H
76	COC ₄ H ₉	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	H
77	COCH(CH ₃) ₂	COCH ₃	OH	Cl	H	CH ₃	CH ₃	CH ₃	H
78	COCH ₂ CH ₃	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	H
79	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	H	CH ₃	CH ₃	H
80	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	CH ₃	CH ₂ OH	CH ₃	H

No.	R1	R2	R3	R4	R5	R6	R7	R8	R9
81	COCH(CH ₃) ₂	CHO	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	H
82	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	CH ₃	H	CH ₃	H
83	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	H	H
84	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	H	CH ₃	H	H
85	COCH ₂ CH ₃	H	OH	Cl	Cl	H	CH ₃	H	H
86	COCH ₃	COCH ₃	OH	Cl	Cl	H	CH ₃	H	H
87	COCH(CH ₃) ₂	CH(OH)CH ₃	OH	Cl	Cl	H	CH ₃	H	H
88	H	COCH ₃	OH	Cl	Cl	H	CH ₃	H	H
89	COCH ₃	CH(OH)CH ₃	OH	Cl	Cl	H	CH ₃	H	H
90	H	CH(OH)CH ₃	OH	Cl	Cl	H	CH ₃	H	H
91	COCH(CH ₃) ₂	COCH ₃	OH	H	Cl	H	CH ₃	H	H
92	COC ₄ H ₉	COCH ₃	OH	Cl	Cl	H	CH ₃	H	H
93	COCH(CH ₃) ₂	COCH ₃	OH	Cl	H	H	CH ₃	H	H
94	COCH ₂ CH ₃	COCH ₃	OH	Cl	Cl	H	CH ₃	H	H
95	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	H	CH ₃	H	H
96	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	H	CH ₂ OH	H	H
97	COCH(CH ₃) ₂	CHO	OH	Cl	Cl	H	CH ₃	H	H
98	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	H	H	H	H
99	COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	H	CH ₃	H	H

preferably,

R1	R2	R3	R4	R5	R6	R7	R8	R9
COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
COCH(CH ₃) ₂	CH(OH)CH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
COCH(CH ₃) ₂	COCH ₃	OH	H	H	CH ₃	CH ₃	CH ₃	CH ₃
COCH(CH ₃) ₂	CH(OH)CH ₃	OH	H	H	CH ₃	CH ₃	CH ₃	CH ₃
COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	H	CH ₃	CH ₃	CH ₃
COCH(CH ₃) ₂	CH(OH)CH ₃	OH	Cl	Cl	H	CH ₃	CH ₃	CH ₃
COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	H	CH ₃
COCH(CH ₃) ₂	CH(OH)CH ₃	OH	Cl	Cl	CH ₃	CH ₃	H	CH ₃
COCH(CH ₃) ₂	COCH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	H
COCH(CH ₃) ₂	CH(OH)CH ₃	OH	Cl	Cl	CH ₃	CH ₃	CH ₃	H

7. Avilamycin derivative that can be obtained in that in a cell that can be cultivated, which contains the necessary genes and/or enzymes for the synthesis of an orthosomycin basic body consisting of

- a) a terminal dichloroisovernic acid moiety (A in Formula I) and
- b) a heptasaccharide esterified with it, linked via normal ester bonds and ortho ester bonds (B to H in Formula I), composed of:
 - (i) two D-olivose moieties (B and C),

- (ii) a 2-deoxy-D- evalose moiety (D),
- (iii) a D-fucose moiety (E),
- (iv) a D-mannose moiety (F),
- (v) an L-lyxose moiety (G), and
- (vi) a (methyl) eurekanate moiety (H),

by modifying with gene technology, deleting, and/or not expressing at least one nucleic acid, the sequence of which corresponds by at least 95%, preferably 97%, and particularly precisely to the nucleic acid sequence in accordance with one of Figures 1 to 54, by cultivating the cell modified in this way, by recovering and processing the top portion of the culture, by purifying and isolating the avilamycin derivative(s), and, if applicable, by separating different derivatives from one another,

with the proviso that R1-R9 cannot simultaneously take on the meanings in accordance with the combination, in each instance, as shown below:

R1	R2	R3	R4	R5	R6	R7	R8	R9
COCH(CH ₃) ₂	COCH ₃	OH	H	Cl	CH ₃	CH ₃	CH ₃	CH ₃
COCH(CH ₃) ₂	COCH ₃	OCH ₃	Cl	H	CH ₃	CH ₃	CH ₃	CH ₃
COCH(CH ₃) ₂	COCH ₃	OCH ₃	Cl	Cl	H	CH ₃	CH ₃	CH ₃
COCH(CH ₃) ₂	COCH ₃	OCH ₃	Cl	Cl	CH ₃	CH ₃	H	CH ₃
COCH(CH ₃) ₂	CHO	OCH ₃	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
COCH(CH ₃) ₂	COCH ₃	OCH ₃	Cl	Cl	CH ₃	H	CH ₃	CH ₃
COCH(CH ₃) ₂	COCH ₃	OCH ₃	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
COCH ₂ CH ₃	H	OCH ₃	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
COCH ₃	COCH ₃	OCH ₃	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
COCH(CH ₃) ₂	CH(OH)CH ₃	OCH ₃	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
H	COCH ₃	OCH ₃	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
COCH ₃	CH(OH)CH ₃	OCH ₃	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
H	CH(OH)CH ₃	OCH ₃	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
COC ₄ H ₉	COCH ₃	OCH ₃	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
COCH ₂ CH ₃	COCH ₃	OCH ₃	Cl	Cl	CH ₃	CH ₃	CH ₃	CH ₃
COCH(CH ₃) ₂	COCH ₃	OCH ₃	Cl	Cl	CH ₃	CH ₂ OH	CH ₃	CH ₃

8. Avilamycin derivative according to Claim 7, characterized in that the cell that can be cultivated is selected from a cell of the type *Streptomyces viridochromogenes* or a cell that with the exception of the nucleic acid(s) modified by gene technology, deleted, or not expressed, contains the nucleic acids in accordance with a sequence of one of the consecutive numbers 1-54 (in accordance with Table 1 in combination with Figure 1), or nucleic acids that are homologous to it by at least 95%, preferably 97%, or contains the gene cluster in accordance with Figure 109, is preferably selected from a cell of the type *Streptomyces viridochromogenes*, particularly a cell of the type *Streptomyces viridochromogenes* Tü 57.

9. Avilamycin derivative according to one of Claims 7 or 8, characterized in that the modified nucleic acid(s) coded for a methyl transferase and/or for a halogenase.

10. Avilamycin derivative according to Claim 9, characterized in that the sequence(s) of the modified nucleic acid(s) before being modified correspond(s) by at least 95%, preferably 97%, and particularly precisely to the nucleic acid sequence(s) of at least one of the sequences in accordance with consecutive number 1 or 2-7 (in accordance with Table 1 in combination with Figure 1), preferably one of the sequences with consecutive number 1, 2, 4, or 6 (Table 1 in combination with Figure 1), particularly the sequence with consecutive number 2 or the sequences with consecutive numbers 2 and 1, numbers 2 and 4, or numbers 2 and 6 (in accordance with Table 1 in combination with Figure 1)

11. Avilamycin derivative according to one of Claims 7 to 10, characterized in that the modification of the nucleic acid(s) has the result that the protein(s) or polypeptide(s) coded by the nucleic acid(s) modified by gene technology is/are no longer synthesized after the modification by gene technology.

12. Avilamycin derivative according to one of Claims 1 to 5, 6 or 7 to 11, characterized in that it is more hydrophilic than avilamycin A or C or evernimycin (ziracin).

13. Nucleic acid in its sequence corresponding by at least 95%, preferably 97%, and particularly precisely to the nucleic acid sequence in accordance with one of the sequences with the consecutive number 1 to 51 (in accordance with Table 1 in combination with Figure 1).

14. Nucleic acid according to Claim 13, characterized in that the nucleic acid corresponds by at least 95%, preferably 97%, and particularly precisely to the nucleic acid sequence in accordance with one of the sequences with consecutive number 1 to 32 and 48 to 51 (in accordance with Table 1 in combination with Figure 1), preferably 1 to 7, especially 1, 2, 4, or 6.

15. Gene clusters containing "Open reading frames," preferably 54, which correspond, in their nucleic acid sequence, by at least 95%, preferably 97%, and particularly precisely to the nucleic acid sequences according to the sequences with the consecutive numbers 1 to 54 (in accordance with Table 1 in combination with Figure 1) and that are arranged on a nucleic acid strand, preferably in accordance with Figure 109.

16. Protein or polypeptide corresponding, in its amino acid sequence, by at least 95%, preferably 97%, and particularly precisely to the amino acid sequence in accordance with one of the sequences with the consecutive number 55-105 (in accordance with Table 1 in combination with Figure 1).

17. Protein or polypeptide according to Claim 16, characterized in that the protein or polypeptide corresponds by at least 95%, preferably 97%, and particularly precisely to the nucleic acid sequence in accordance with one of the sequences with the consecutive number 55 to 86 or 97, 98 or 100 or 102 to 105 (in accordance with Table 1 in combination with Figure 1), preferably 55 to 61, particularly 55, 56, 58, or 60.

18. Protein or polypeptide coded by a nucleic acid according to one of Claims 13 or 14.

19. Cell modified by gene technology, containing at least one non-endogenous nucleic acid according to one of Claims 13 or 14, a non-endogenous gene cluster according to Claim 15, and/or a non-endogenous protein or polypeptide according to one of Claims 16-18.

20. Cell containing at least one nucleic acid modified by gene technology, the sequence of which, before modification, corresponded by at least 95%, preferably 97, and particularly precisely to the nucleic acid sequence in accordance with one of the sequences with the consecutive number 1 to 54 (in accordance with Table 1 in combination with Figure 1).

21. Cell of the type *Streptomyces viridochromogenes*, preferably of the subtype Tü57, characterized in that at least one of the nucleic acids with a sequence in accordance with one of the sequences with consecutive number 1-54 (in accordance with Table 1 in combination with Figure 1) was modified by gene technology or deleted.

22. Cell according to Claim 21, characterized in that at least one of the nucleic acids with a sequence in accordance with one of the sequences with the consecutive number 1 or 2-7 (in accordance with Table 1 in combination with Figure 1), preferably with one of the sequences with the consecutive number 1, 2, 4, or 6 (Table 1 in combination with Figure 1), particularly with a sequence with the consecutive number 2 or with a sequence with the consecutive numbers 2 and 1, 2 and 4, or 2 and 6 (in accordance with Table 1 in combination with Figure 1) was modified by gene technology or deleted.

23. Cell according to Claim 21, of the mutant type *Streptomyces viridochromogenes* GW4, *Streptomyces viridochromogenes* GW4-AM1, *Streptomyces viridochromogenes* GW2 or *Streptomyces viridochromogenes* GW5, characterized in that avilamycin derivatives in which R3 = OH are synthesized by the mutant type *Streptomyces viridochromogenes* GW4, avilamycin derivatives in which R3 = OH, R4 = H, and R5 = H are synthesized by the mutant type *Streptomyces viridochromogenes* GW4-AM1, avilamycin derivatives in which R3 = OH and R6 = H are synthesized by the mutant type *Streptomyces viridochromogenes* GW2, and avilamycin derivatives in which R3 = OH and R9 = H are synthesized by the mutant type *Streptomyces*

viridochromogenes GW5.

24. Use of a nucleic acid according to one of Claims 13 or 14, of a gene cluster according to Claim 15, of a protein or polypeptide according to one of Claims 16 to 18, and/or of a cell according to one of Claims 19 to 23, for the production of an avilamycin derivative, preferably according to one of Claims 1 to 12.

25. Process for the production of avilamycin derivatives according to one of Claims 1 to 6, characterized by the following steps:

(1) in a cell that can be cultivated, which contains the necessary genes, and/or enzymes for the synthesis of the orthosomycin basic body consisting of

- a) a terminal dichloroisoeverninic acid moiety (A in Formula I) and
- b) a heptasaccharide esterified with it, linked via normal ester bonds and ortho ester bonds (B to H in Formula I), composed of:
 - (i) two D-olivose moieties (B and C),
 - (ii) a 2-deoxy-D-evalose moiety (D),
 - (iii) a D-fucose moiety (E),
 - (iv) a D-mannose moiety (F),
 - (v) an L-lyxose moiety (G), and
 - (vi) a (methyl) eurekanate moiety (H),

at least one nucleic acid, the sequence of which corresponds by at least 95%, preferably 97%, and particularly precisely to the nucleic acid sequence in accordance with one of the sequences with a consecutive number from 1 to 54 (in accordance with Table 1 in combination with Figure 1), is modified by gene technology, deleted and/or not expressed,

- (2) the cell modified by gene technology in this way is cultivated,
- (3) the top portion of the culture is recovered
- (4) the top portion of the culture is processed and the avilamycin derivative(s) formed in this way is/are purified and isolated,
- (5) if applicable, different derivatives are separated from one another.

26. Process according to Claim 25, characterized in that the cell that can be cultivated is selected from a cell of the type *Streptomyces viridochromogenes* or a cell that, with the exception of the nucleic acid modified by gene technology, deleted or not expressed contains the nucleic acids in accordance with a sequence with the consecutive number 1-54 (in accordance with Table 1 in combination with Figure 1), or nucleic acids homologous to them by at least 95%, preferably 97%, or the gene cluster according to Claim 15, preferably selected from a cell of the type *Streptomyces viridochromogenes*, especially a cell of the type *Streptomyces viridochromogenes* Tü 57.

27. A process according to one of Claims 25 or 26, characterized in that the modified nucleic acid(s) coded for a methyl transferase and/or for a halogenase.

28. Process according to Claim 27, characterized in that the sequence(s) of the modified nucleic acid(s) before modification correspond(s) by at least 95%, preferably 97%, and particularly precisely to the nucleic acid sequence(s) of at least one of the sequences with the consecutive numbers 1 or 2-7 (in accordance with Table 1 in combination with Figure 1), preferably one of the sequences with the consecutive number 1, 2, 4, or 6 (Table 1 in combination with Figure 1), particularly the sequence with the consecutive number 2 or the sequences with the consecutive numbers 2 and 1, 2 and 4, or 2 and 6 (in accordance with Table 1 in combination with Figure 1).

29. Process according to one of Claims 25 to 28, characterized in that modification of the nucleic acid(s) has the result that the protein(s) or polypeptide(s) coded by the nucleic acid(s) modified by gene technology is/are no longer synthesized after the gene technology modification.

30. Medication containing avilamycin derivatives according to one of Claims 1 to 12, as well as any suitable additives and/or ancillary substances, if necessary.

31. Use of an avilamycin derivative according to one of Claims 1 to 12 for the production of a medication with an antibiotic effect for treatment, or for the production of a medication for treatment of diseases, for example infectious diseases.